USER MANUAL

VDTU2-102/204

VDSL2 CO/CPE Modem

CTC union CTC Union Technologies Co., Ltd.

VDSL2 Point to Point Solution

VDSL2 (Very-High-Bit-Rate Digital Subscriber Line 2, ITU-T G.993.2 Standard) is an access technology that exploits the existing infrastructure of copper wires that were originally deployed for POTS services. It can be deployed from central offices, from fibre-fed cabinets located near the customer premises, or within buildings.

ITU-T G.993.2 VDSL2 is the newest and most advanced standard of DSL broadband wireline communications. Designed to support the wide deployment of Triple Play services such as voice, video, data, high definition television (HDTV) and interactive gaming, VDSL2 enables operators and carriers to gradually, flexibly, and cost efficiently upgrade existing xDSL-infrastructure.

ITU-T G.993.2 (VDSL2) is an enhancement to G.993.1 VDSL that permits the transmission of asymmetric and symmetric (Full-Duplex) aggregate data rates up to 200 Mbit/s on twisted pairs using a bandwidth up to 30 MHz.

VDSL2 deteriorates quickly from a theoretical maximum of 250 Mbit/s at 'source' to 100 Mbit/s at 0.5 km and 50 Mbit/s at 1 km, but degrades at a much slower rate from there, and still outperforms VDSL. Starting from 1,6 km its performance is equal to ADSL2+.

ADSL-like long reach (LR) performance: ADSL-like long reach performance is one of the key advantages of VDSL2. LR-VDSL2 enabled systems are capable of supporting speeds of around 1-4 Mbit/s (downstream) over distances of 4 to 5 km, gradually increasing the bit rate up to symmetric 100Mbit/s as loop-length shortens. This means that VDSL2-based systems, unlike VDSL1 systems, are not limited to short loops or MTU/MDUs only, but can also be used for medium range applications.

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1. Unpacking Information

Check List

Carefully unpack the package and check its contents against the checklist.
Package Contents

- VDSL2 Modem (VDTU2-104 Modem / VDTU2-204 Modem)
- Two plastic feet
- User's Manual
- AC to DC 12V Power Adapter
- RJ-45 cable
- RJ-11 cable

Please inform your dealer immediately for any missing, or damaged parts. If possible, retain the carton, including the original packing materials, Use them to repack the unit in case there is a need to return for repair.

2. Installation

Hardware Installation

This chapter describes how to install the VDTU2-104 & 204 MODEM and establishes network connections. You may install the VDTU2-104 & 204 MODEM on any level surface (e.g, a table or shelf). However, please take note of the following minimum site requirements before you begin.

2.1 Pre-installation Requirements

Before you start actual hardware installation, make sure you can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected. Verify the following installation requirement:

- Power requirements: DC12V/1A or above.
- The VDTU2-104 & 204 MODEM should be located in a cool dry place, with at least 10cm/4in of space at the front and back for ventilation.
- Place the VDTU2-104 & 204 MODEM out of direct sunlight, and away from heat sources or areas with a high amount of electromagnetic interference.
- Check if network cables and connectors needed for installation are available

General Rules

Before making any connections to the VDTU2-104 & 204 MODEM, note the following rules:

- Ethernet Port (RJ-45)

  All network connections to the Modem Ethernet port must be made using Category 5 UTP for 100Mbps;

  Category 3,4 UTP for 10Mbps

  No more than 100 meters of cabling may be use between the MUX or HUB and an end node.

- Phone Port (RJ-11)

  All Phone set connections to the RJ-11 Port made using 24~26 Gauge phone wiring.

Connecting the VDTU2-104&CPE MODEM

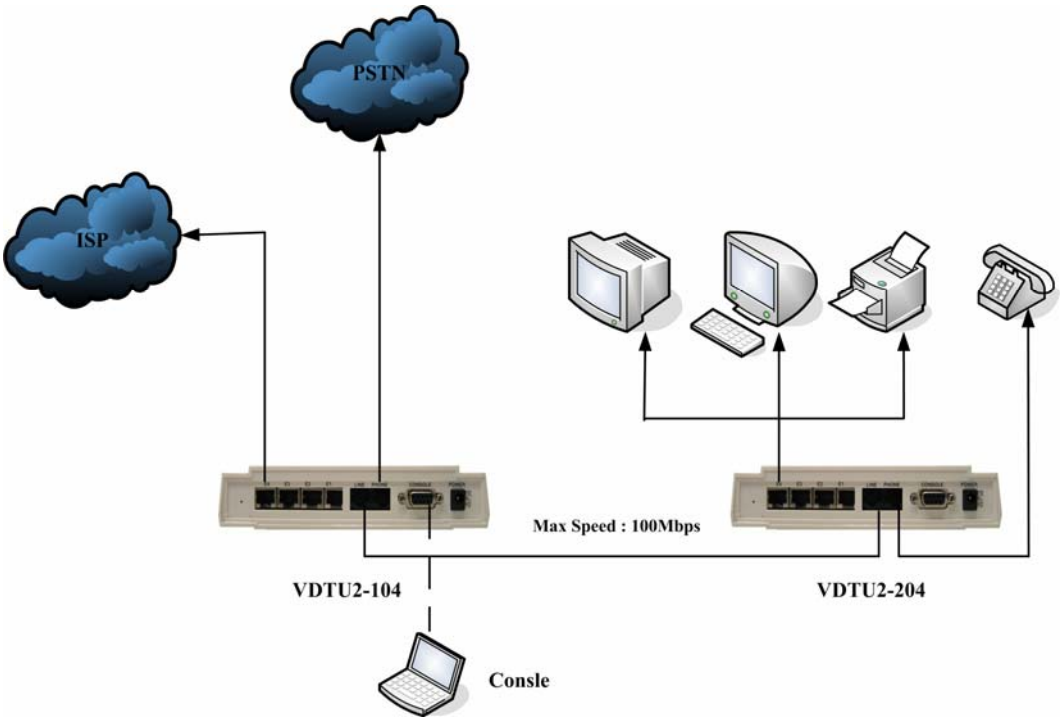
The VDTU2-104 & 204 MODEM can be controlled by a PC, henceforth, called the "Control PC". For this purpose, you

Need a PC with an Ethernet network interface and a DB-9 RS232 serial interface. Two programs are required: A

Web-browser is mandatory and a terminal program should be available optionally. The board has several connectors.

- 4 Ethernet RJ45 jacks (connect LAN devices to route); the Auto MDIX feature of the ports switches automatically between MDI and MDI-X (MDI = Media Dependant Interface), therefore straight Ethernet cables can be used.
- 2 x RJ11 jack (LINE Port is for connects VDSL client side to Line Interface, Phone port is for connects phone set or FAX machine)
- 1 x Console port (monitoring, access to operating system via shell for firmware downloads, starting drivers and web etc.,)
- 1 Power Supply (as described above)

• Figure 2.1 VDSL2 Point to Point application



3. Hardware Description

This section describes the important parts of the VDTU2-104 & 204 MODEM. It features the front indicators and rear connectors.

Front Indicators

The following figure shows the front panel.

Figure Chapter 3.1 VDTU2-104 Modem

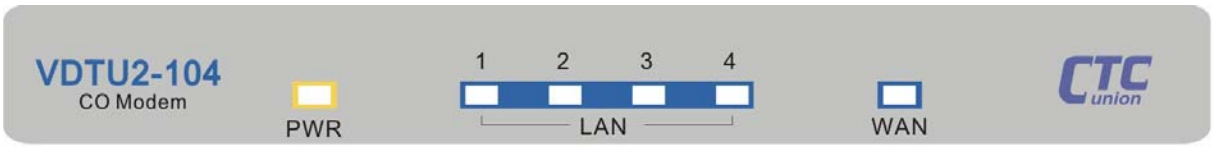


Figure Chapter 3.2 VDTU2-204 Modem

Six LED indicators.
At a quick glance of the front panel, it will be easy to tell if the Modem has power, signal from its Ethernet RJ-45 port or there is phone line signal RJ-11port

Front Indicators

LED Description and Operation

The Modem has three LED indicators.

LEDs	Status	Descriptions
PWR (**Ready LED**)	Steady Green	It will light up (ON) to show that the product is power good, and system reset OK.
1~4 (**Ethernet LED**)	Steady Green Flashing (LINK/ACT)	Each RJ-45 station port on the Ethernet is assigned an LED light for monitoring port “Good Linkage”. LED is normally OFF after the power on operation, but will light up steadily to show good linkage and flashing to show data transmission.
WAN (**VDSL LED**)	Steady Green	RJ11 station port on the VDSL is assigned an LED light for monitoring port “Good Linkage”. LED is normally OFF after the power on operation, but will light up steadily to show good linkage.

Rear Panel

The following figure shows the rear connectors

Figure Chapter 3.3 Rear Connectors

VDTU2-104&CPE MODEM Rear Connectors

Connectors	Description	Type
Line	For connecting to the VDSL Modem Using a RJ-11 cable	RJ-11
Phone	For connecting to the telephone or Fax、ISDN Modem	RJ-11
E1~E4	For connecting to a Ethernet equipped device	RJ-45
Console port	For connecting to PC with RS-232 serial port over a D-SUB Cable	RS-232

Power On

1. Check the adapter is properly connected.
2. Verify the power LED is steadily on.

4. Setup the VDTU2-104&CPE MODEM by Web Browser

The VDTU2-104 & 204 MODEM provides a built-in web browser. You can use Web browser to configure the VDTU2-104 & 204 Modem. First please input the IP address 192.168.16.249 (VDTU2-104 Modem) and 192.168.16.250 (VDTU2-204 Modem) in the Web page.

4.1 Login.

The password is “admin“.

Figure 4.1 Login

4.2 Select the Menu Level

There is a simple Setup Wizard for end users and an Advanced Setup. The focus of this manual is on the Advanced Setup.

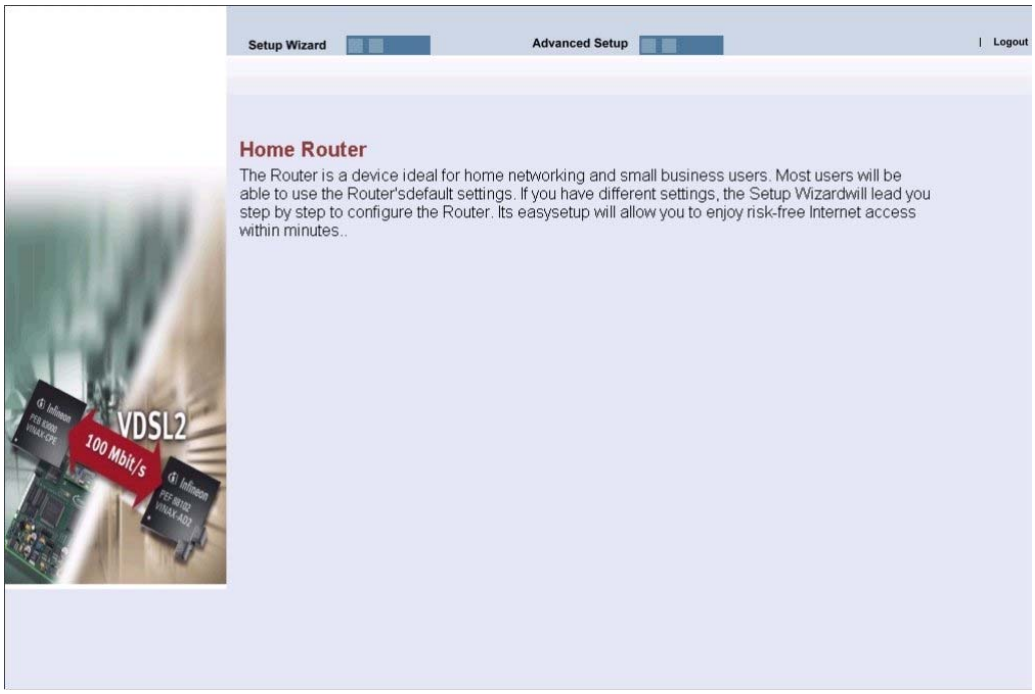

Setup Wizard
Advanced Setup
Logout
Home Router
The Router is a device ideal for home networking and small business users. Most users will be able to use the Router'sdefault settings. If you have different settings, the Setup Wizardwill lead you step by step to configure the Router. Its easysetup will allow you to enjoy risk-free Internet access within minutes..
VDSL2
100 Mbit/s

Figure 4.2 Select the Advanced Setup in the Entry Screen

4.3 Select Advanced Setup

Select the Advanced Setup. The menu below will be used frequently. As an exercise and an example now the IP address will be set.

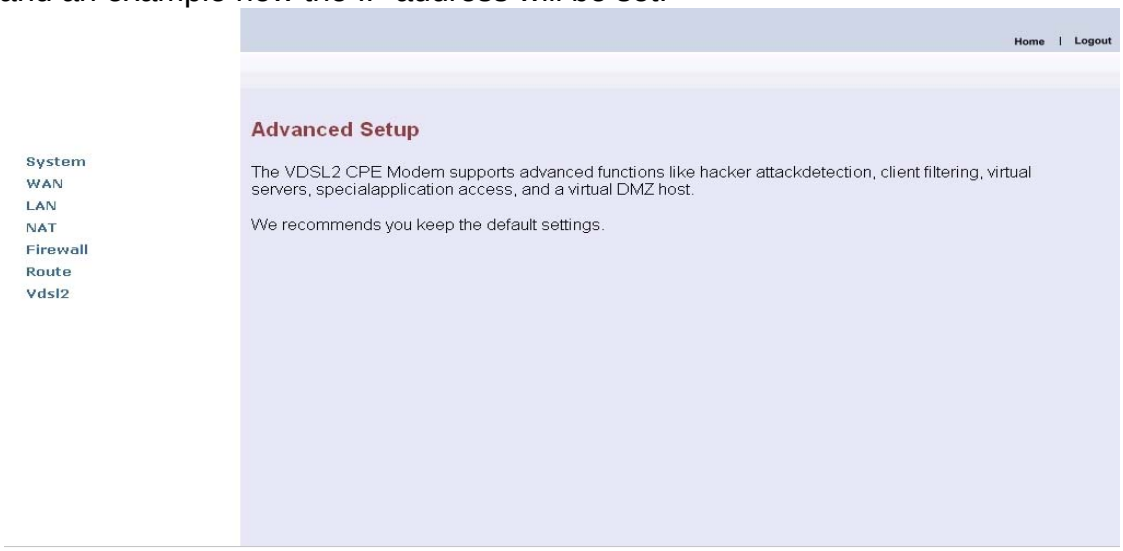


Figure 4.3 Advanced Setup

Attention: The settings in the following Chapter 4.4 only need to be performed in order to change LAN settings. Such a change may be necessary when connecting the VDTU2-104 & 204 Modem for the to a new control PC and/or in order to turn the IP address changed via a shell command into a default address for the next restart of the board.

4.4 Select LAN

The menus below will not be used very often. But when connecting the VDTU2-104 & 204 Modem to a new control PC, you may want to go through the following steps in order to make the IP address previously set by ifconfig in the terminal console permanent. Or on some later occasion you may want to change it again without using the console. Then the menu below will help you too.
In order to set the IP address, click on “LAN Settings”.

Figure 4.4 LAN menu

4.4.1 Select LAN Settings and set the IP Address

The form below is used to change the IP address of the LAN port “adm0” in the VDTU2-104 & 204 Modem.

- The proposed IP address either is the default address of adm0 or it is the address changed by an ifconfig command via the shell running in the terminal.
- The Subnet Mask display can be ignored.
- In case the DHCP checkbox is checked, some additional data and options will be on display (see Chapter 6.2.5.1 on Page 50). The DHCP server is not required to work with VDSL2 in a lab environment. It is recommended to uncheck the box if it is not unchecked already.

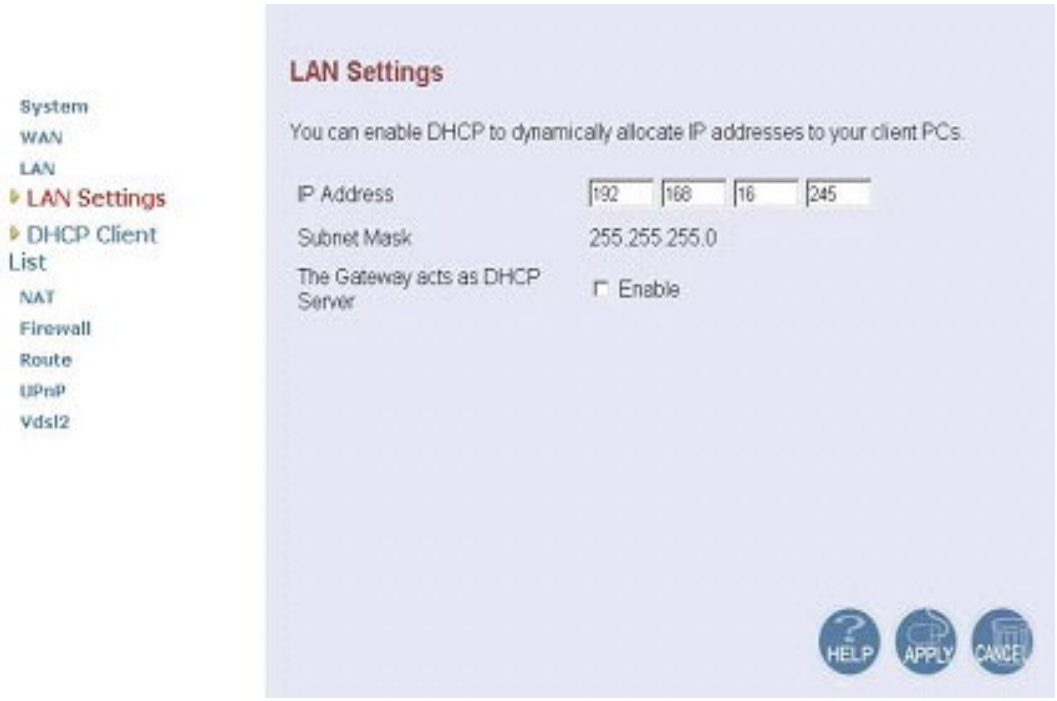


Figure 4.4.1 LAN Settings

Now the IP address either may be changed or left as it is. If it has been changed in the form or after it has been changed using the ifconfig command via the shell running in the terminal, it needs to be stored permanently Hit the “APPLY” button in order to make the displayed IP address new default address.

4.4.2 Restart the Settings Dialog

After the “APPLY” button has been hit, the displayed IP address “adm0” port will be stored in a non volatile memory on the VDTU2-104 & 204 Modem. Also, the Ethernet link between the control PC and the VDTU2-104 & 204 Modem will be re-initialized – even if the IP address has not been changed. Refresh the display of the HTTP browser running on the control PC and login again.

Figure 4.4.2 Login after Storing the IP Address as Default Value

The VDTU2-104 & 204 Modem now is prepared to be controlled by the control PC.

5. Building a VDSL2 System

First a quick overview over a complete setup:

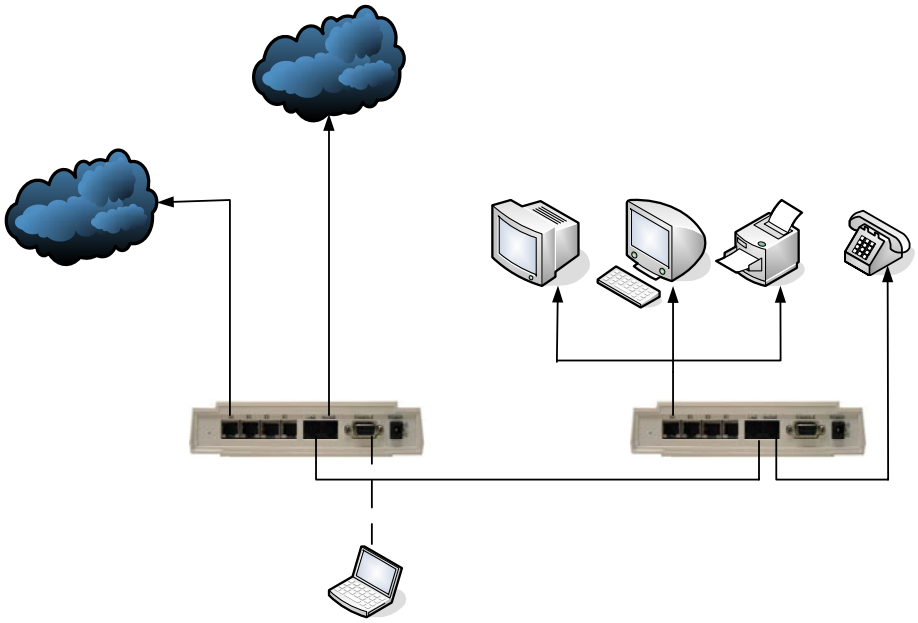


Figure 5 VDSL2 Application

5.1 Connect the VDTU2-104 Modem and the VDTU2-204 Modem to the Line

The objective for VDSL2 is passing data over a twisted pair cable at high speed. In the setup, either such a cable connects the VDTU2-104 Modem and the VDTU2-204 Modem, or a line simulator or any other hardware representation of a cable network, with or without noise injection and crosstalk simulations.

5.2 Connect the VDTU2-104 Modem and the VDTU2-204 Modem to LAN Devices

In the setup, usually a Ethernet tester serves as representation of the LAN side as well as representation of the WAN side.

5.3 Run Demos and Tests

The Ethernet tester may send data downstream as well as upstream. It also receives the data in order to check the integrity of the data transmission.
Different data rates can be tested under different line conditions.

6. Operating the VDSL2 System

After the VDSL2 system has been set up, you may want to configure the settings which is related to VDSL2. Configuration of operation modes, test modes (loop back) and the display of status information is supported by an graphical user interface.

6.1 Configuration Settings

Configure and start the VDTU2-104 Modem and the VDTU2-204 Modem.

- Configuration: As a minimum configuration, usually selecting the bandplan is required.
  See Chapter 6.1.3, Profile Configuration.
- Next, both sides should be activated from the web interface.
  See Chapter 6.1.6, Line Activation
- The connection status of the link can be monitored.
  See Chapter 6.2.1, Line Status

6.1.1 Channel Configuration

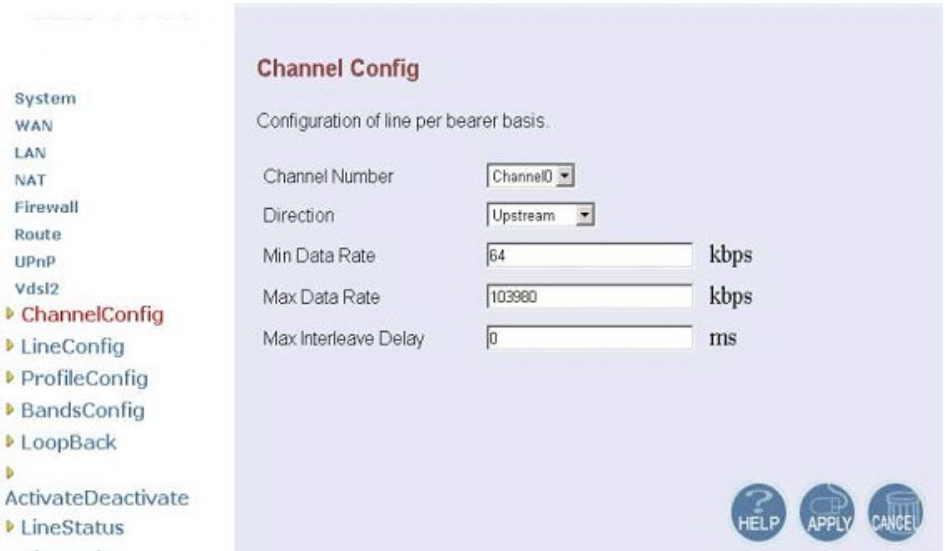


Figure 6.1.1 Channel Configuration Menu

Channel Configuration Settings

Setting	Description
Channel Number	To which bearer channel number shall the settings apply? ・Channel 0
Direction	To which direction shall the settings apply? ・Upstream ・Downstream
Min Data Rate	Minimum Payload Data Rate
Max Data Rate	Maximum Payload Data Rate
Max Int Delay	Maximum Interleaver Delay

6.1.2 Line Configuration

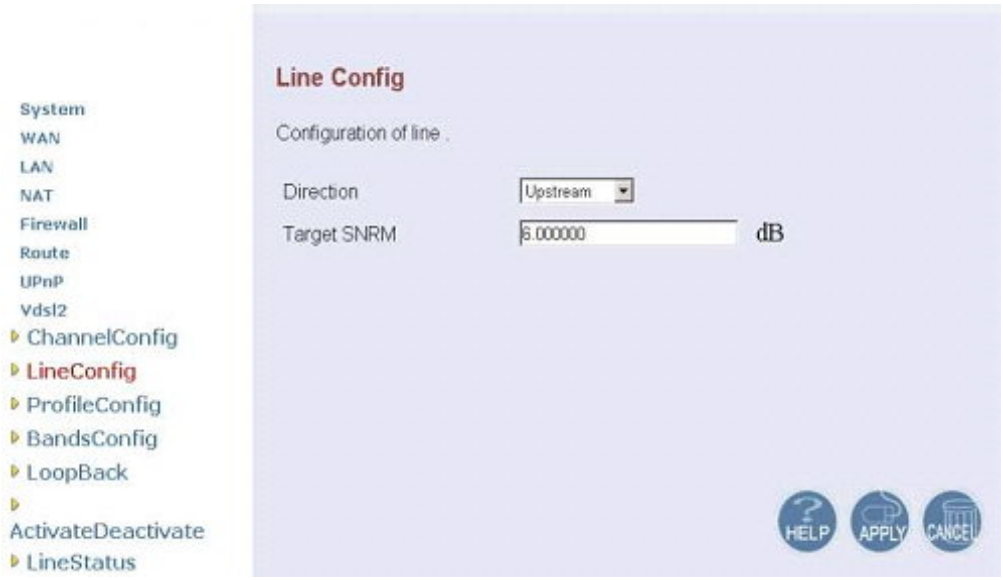


Figure 6.1.2 Line Configuration Menu for SNR Margin Selection

Line Configuration

Setting	Description
Direction	Select the target direction.
Target SNRM	Set the required SNR Margin *10 (50=5dB)

6.1.3 Profile Configuration

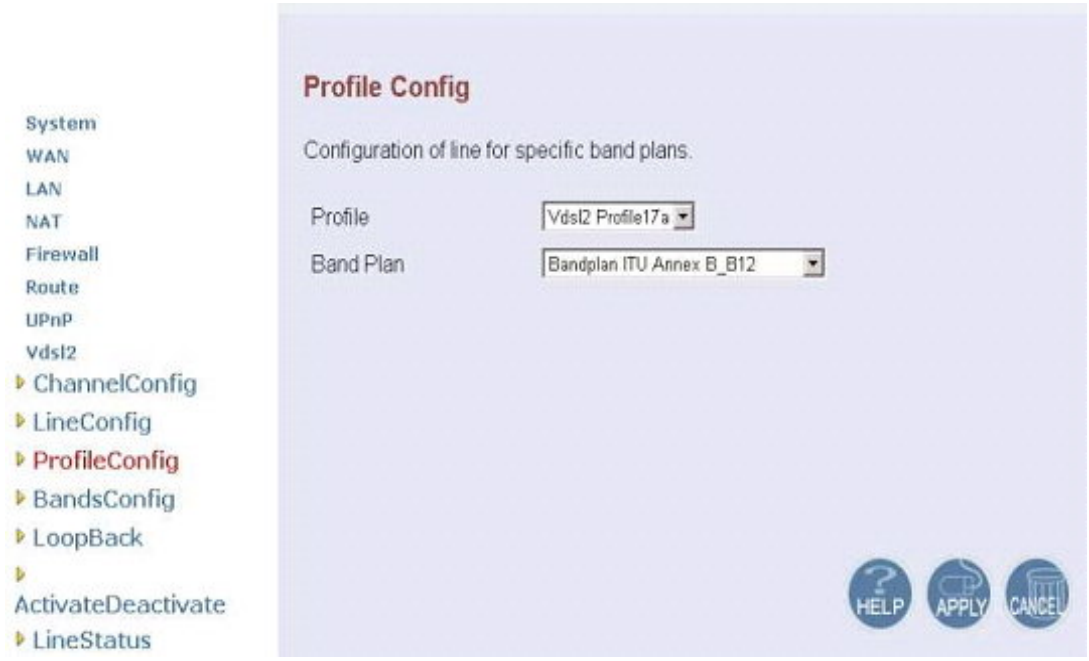


Figure 6.1.3 Profile Configuration

6.1.4 Band Configuration

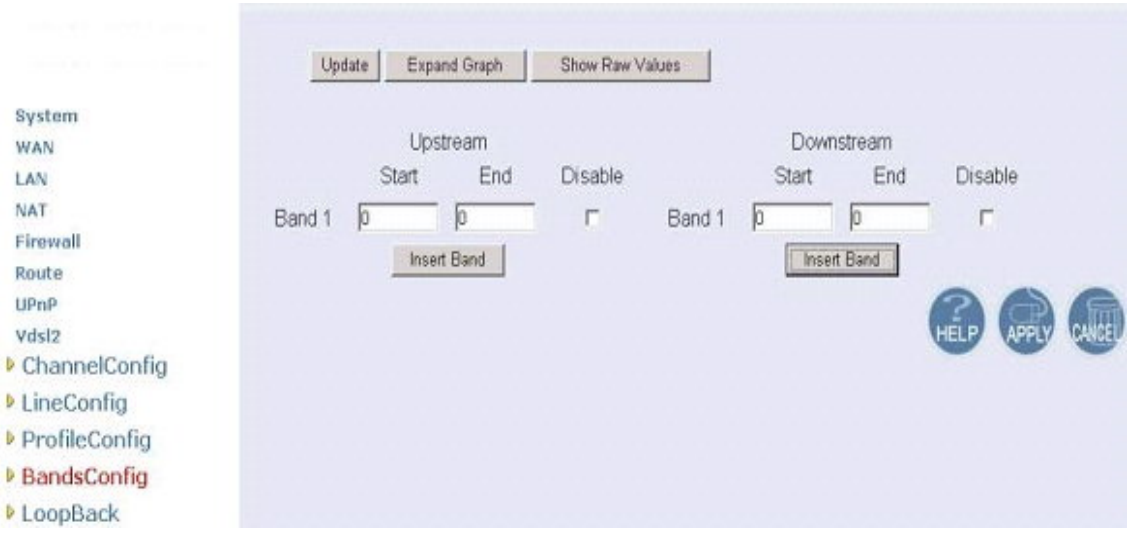


Figure 6.1.4 Band Configuration

6.1.5 Loop Back

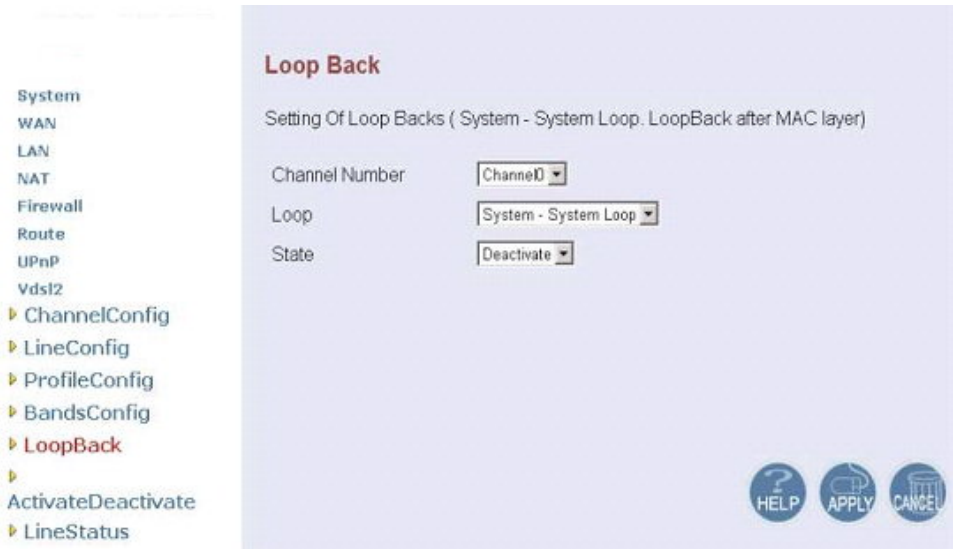


Figure 6.1.5 xTC Loop Back Activation/Deactivation Menu

Loop Back

Setting	Description
Channel Number	To which bearer channel number shall the settings apply? ・Channel 0
xTC	Activate or deactivate loopback within the Transmission Convergence layer.

6.1.6 Line Activation

Figure 6.1.6 Activation and Deactivation of the Line

Line Activation/Deactivation

Setting	Description
Line	Activate or deactivate the line. (Select the activity and the press the APPLY button.)

6.2 Status Displays

6.2.1 Line Status

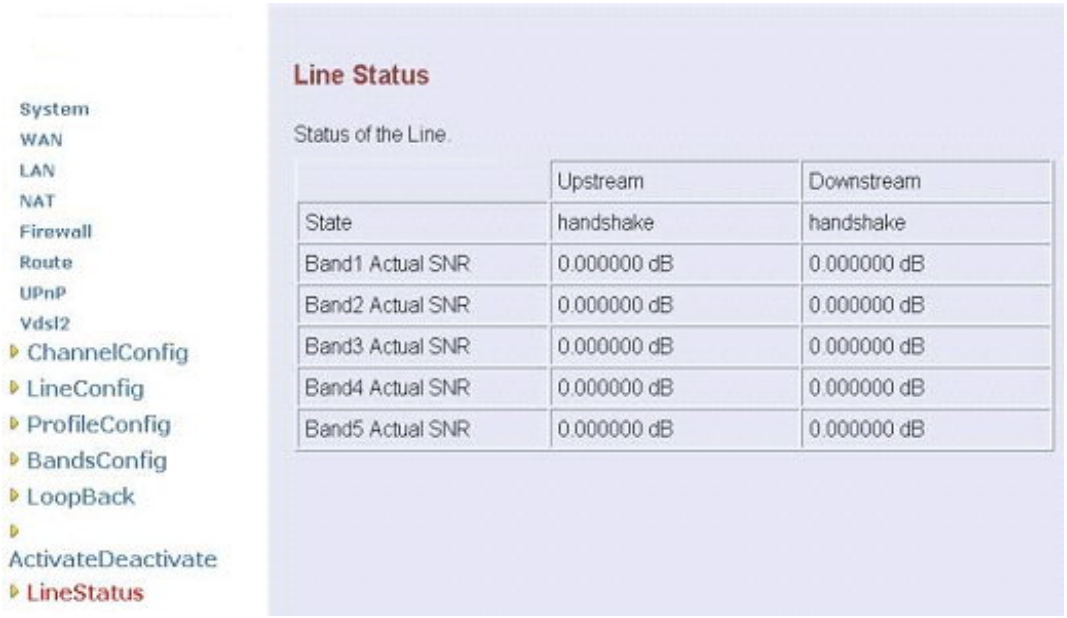


Figure 6.2.1 Line Status Display: Actual SNR

The following status messages may occur: not_initialized, exception, idle request, idle, silent request, silent, handshake, full init, discovery, training, analysis, exchange, showtime no sync, showtime tc sync, fast retrain, lowpower l2, loopdiagnostic, loopdiagnostic complete, resync, test, lowpower l3, unknown

6.2.2 Channel Status

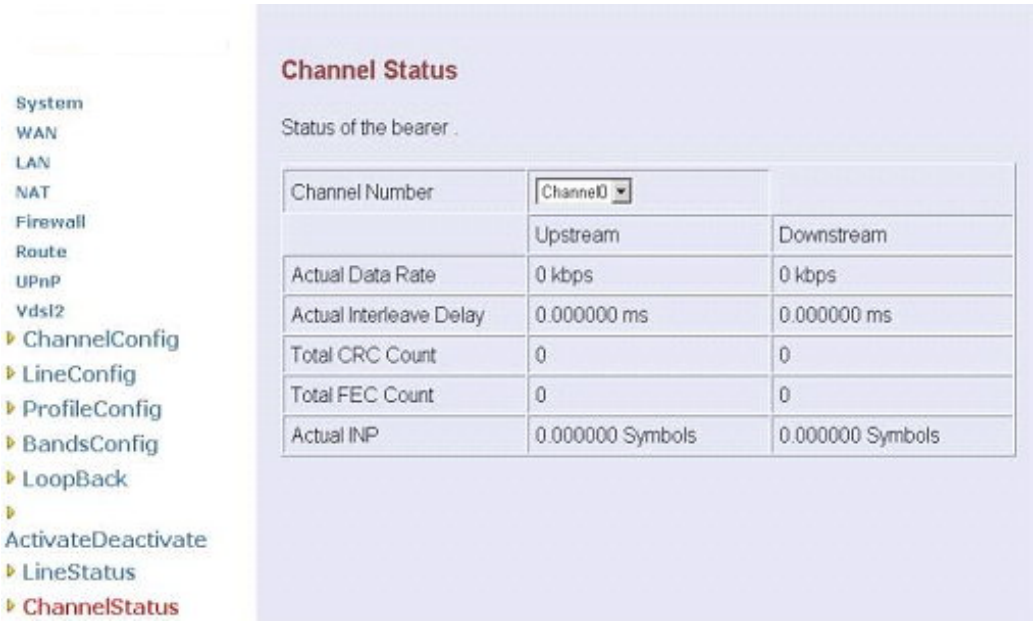


Figure 6.2.2 Channel Status Display: Data Rate, Delay, Error Counters and Impulse Noise Protection

6.2.3 XTC Status

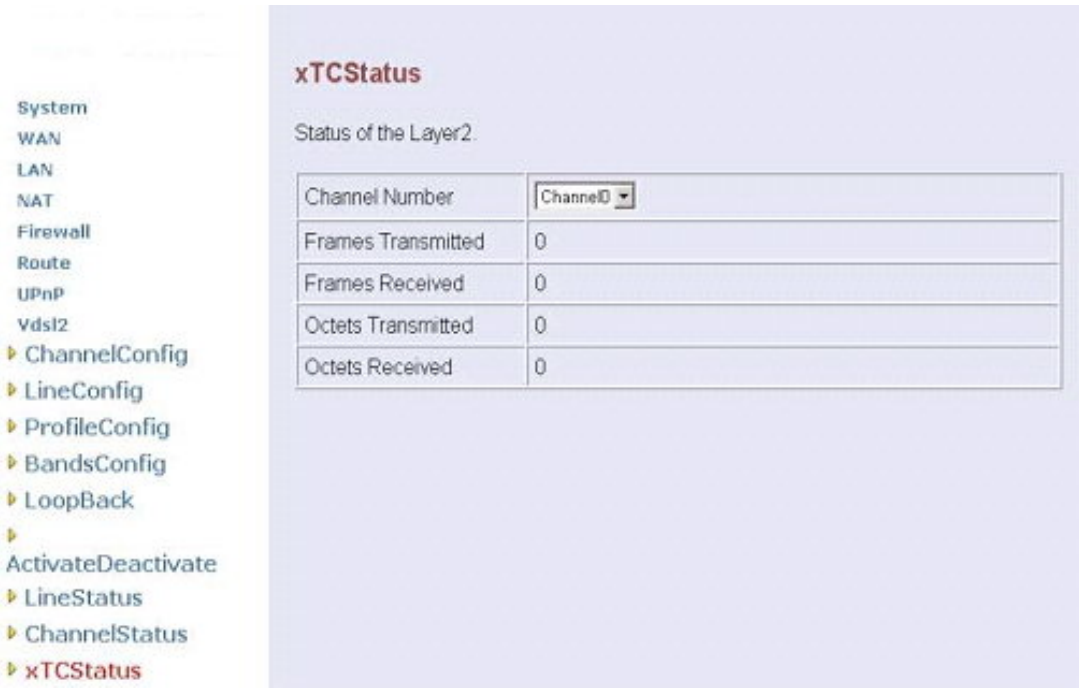


Figure 6.2.3 Display of xTC Status

6.2.4 Version Info

Figure 6.2.4 Display of Version Data

6.2.5 Graphs

Figure 6.2.5 Display of SNR per Carrier

7. Configuration Interface of the Router

This section explains how to configure the router section of the VDTU2-104 & 204 Modem using its web-based
configuration.

The parts of the circuitry as well as the router configuration menu has been ported from that of the reference kit to the VDTU2-104 & 204 Modem reference board. As for the menu, There are only a few differences:

- The “adm1” port now is the port to the VDSL2 side. The port on the LAN is “adm0”. It supports four Ethernet connections.
- The IP addresses are used in this chapter are different from the examples in the previous chapters.
- The password used in this chapter is different from the examples in the previous chapters.
- The VDTU2-104 & 204 Modem of course has no menu option for VDSL settings. The VDTU2-104 & 204 Modem has a VDSL menu which is described in Chapter 6. Also the entry menu (Chapter 4.2) has different “looks” tailored to the VDTU2-104 & 204 Modem.

7.1 Logging on to the VDTU2-104 & 204 Modem

To log on to the VDTU2-104 & 204 Modem Web Application, you must have a valid password. The Administrator creates the log on user with its password. When you log on to the VDTU2-104 & 204 Modem Web Application, the USER LOGIN window is displayed as shown in Figure 7.1.

Figure 7.1 VDTU2-104 & 204 Modem Web Application

In the USER LOGIN window:

1. Enter the password in the Password text box. For an Admin user, the default password is “admin”.
2. Click LOGIN to begin the configuration or click CANCEL in the USER LOGIN window to cancel this log on operation.

7.2 Configuration Menu for Administrators

This chapter is only for Administrators.

The Homepage is the first screen displayed when a user logs on to the VDTU2-104 & 204 Modem Web Application. The VDTU2-104 & 204 Modem Web Application is categorized into two modules:

1. Setup Wizard — An easy-to-use setup wizard provides the most common configurations.
2. Advanced Setup — Advanced setup features allow the user to configure all the functions that are supported by the VDTU2-104 & 204 Modem like Firewall, routing, and UPnP.

7.2.1 Setup Wizard

The Setup Wizard is designed for ease-of-use in order to quickly configure the most common settings. The Admin can view the Setup Wizard link in the homepage. The wizard's first step that allows the admin to configure the system host settings displayed as shown in Figure 7.2.1.

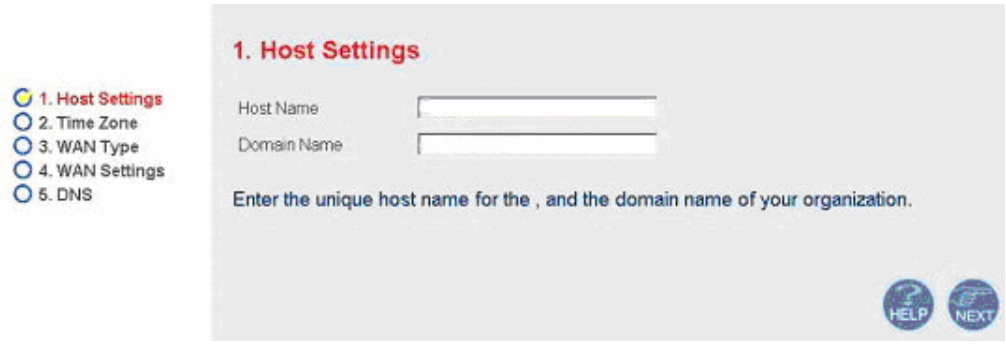


Figure 7.2.1 Setup Wizard's First Step

There are five steps to complete the wizard. Follow the instructions given in each step and enter the desired settings.

7.2.2 Advanced Setup

Click on the Advanced Setup link in the homepage in case you want to configure a wider range of settings. The following configuration options are displayed in the left navigation bar, as shown in Figure 7.2.2:

- System
- WAN
- LAN
- NAT
- Firewall
- Route
- UpnP

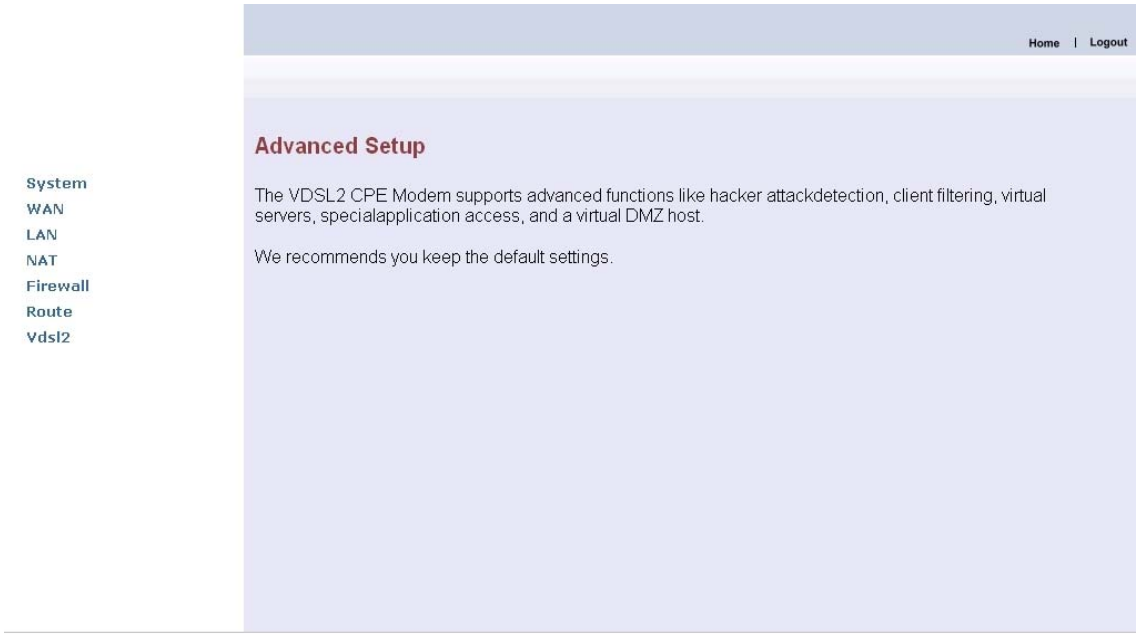


Figure 7.2.2 Advanced Setup

7.2.3 System

The System link can be viewed in the left navigation bar. The following are the options available under System, as shown in Figure 7.2.3 :

- Host Name
- System Time
- Administrator Settings
- Firmware Upgrade
- System Status
- System Log
- Reset

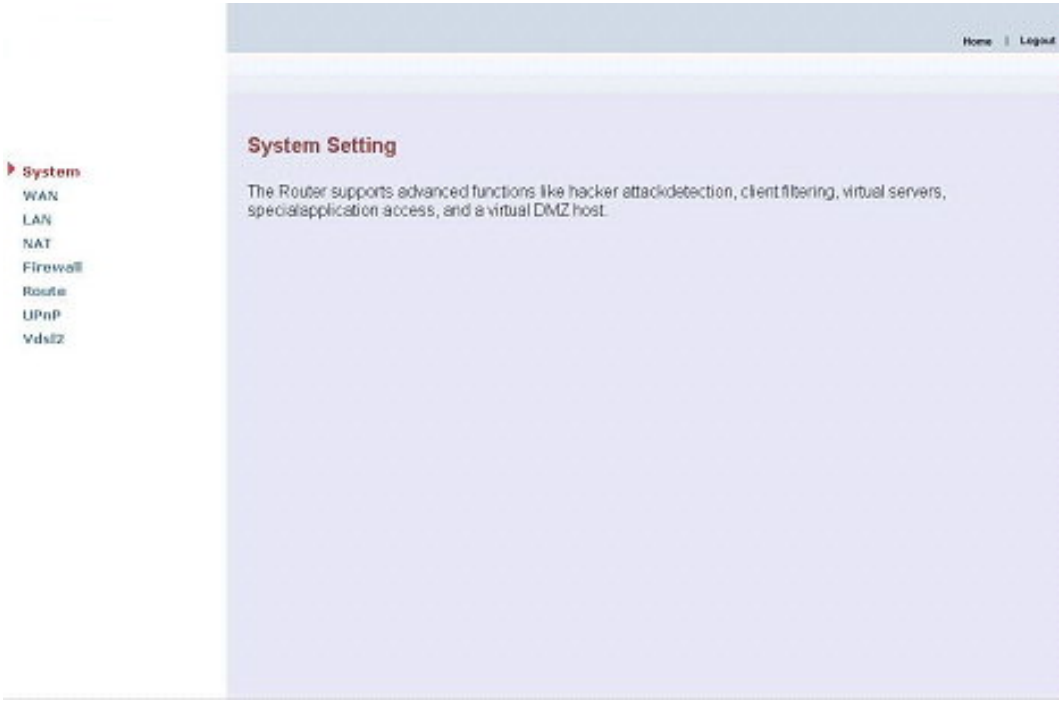


Figure 7.2.3 System in the Left Navigator Bar

7.2.3.1 Host Name

To configure System settings, the user has to enter host and domain name. Click on the Host Name config link in the left navigation bar. A screen is displayed as shown in Figure 7.2.3.1:

HostName
Enter the host name representing your host and the domain name you want to config, then you can doing web configuration by typing the whole name you config instead by typing the ip address.
Host Name
Domain Name
HELP
APPLY
CANCEL

Figure 7.2.3.1 Host Name Configuration

The screen contains the following details:

Fields in Hostname

Field	Description
Host Name	Enter the host name of the VDTU2-104&CPE Modem.
Domain Name	Enter the domain name of the VDTU2-104&CPE Modem.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.3.2 System Time

To configure the system time zone, click on the System Time link in the left navigation bar. A screen is displayed as shown in Figure 7.2.3.2:

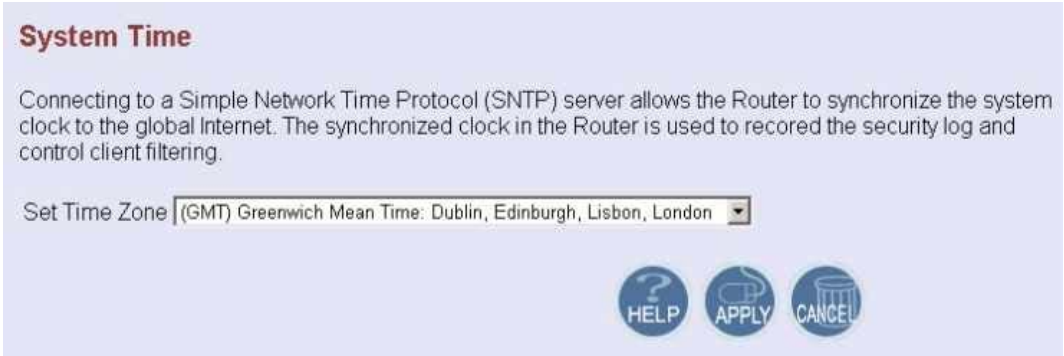

System Time
Connecting to a Simple Network Time Protocol (SNTP) server allows the Router to synchronize the system clock to the global Internet. The synchronized clock in the Router is used to recored the security log and control client filtering.
Set Time Zone
(GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
HELP
APPLY
CANCEL

Figure 7.2.3.2 System Time Configuration

The screen contains the following details:

Fields in System Time

Field	Description
Set Time Zone	Synchronize the system clock with the SNTP server.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.3.3 Administrator Settings

To add a user or change user's password, click on the Administrator Settings link in the left navigation bar. A screen is displayed as shown in Figure 7.2.3.3.

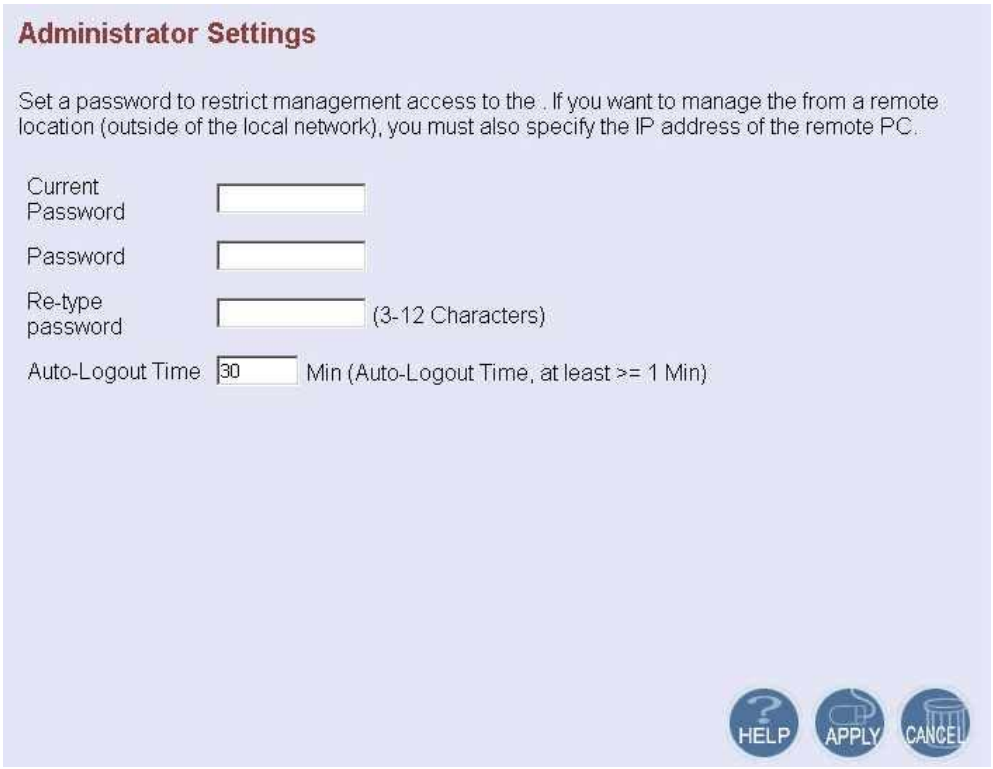

Administrator Settings
Set a password to restrict management access to the . If you want to manage the from a remote location (outside of the local network), you must also specify the IP address of the remote PC.
Current Password
Password
Re-type password
(3-12 Characters)
Auto-Logout Time
30
Min (Auto-Logout Time, at least >= 1 Min)
HELP
APPLY
CANCEL

Figure 7.2.3.3 Administrator Settings Configuration

While adding a user, each user must be assigned a separate port. Hence the number of users that can be added to the system depends on the number of ports available on the VDTU2-104 & 204 Modem.
The screen contains the following details:
Fields in User Setting

Field	Description
Current Password	This is the password associated with the administrator. This is enabled only for the user Administrator login.
Password	This is the password of the login administrator.
Re-type Password	This is the password verification.
Auto-Logout Time	The auto-logout time, at least one minute.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.3.4 Device Mode

The ADM5120 network processor used in the reference system is able to act as either a switch or a router. Clicking on Device Mode on the left navigation bar allows the user to change the mode of operation, as shown in the following figure.

Figure 7.2.3.4 Device Mode

7.2.3.5 Firmware Upgrade

To update the system firmware, click on the Firmware Upgrade link in the left navigation bar. A screen is displayed as shown in Figure 34. NEW Image JTC

System
Host Name Config
System Time
Administrator Settings
Firmware Upgrade
Device Mode
System Status
System Log
Reset
Firmware Update
Netsys. may create new firmware for your Router to improve functionality and performance.
Click here to check for an upgrade on Netsys's website.
Enter the path and name of the upgrade file then click the APPLY button below. You will be prompted to confirm the upgrade.
Runtime Version:
2.4.20_mvl31-ADM5120 #758 Sat Sep 2 22:30:05 CST 2006
APPLY

Figure 7.2.3.5 Firmware Update

The screen contains the following detail:

- Click Browse to select a specified file name to change the File Name.
- Click APPLY to start the firmware update.

7.2.3.6 System Status

To view system status, click on the System Status link in the left navigation bar. A screen is displayed as shown in
Figure 7.2.3.6. NEW IMAGE JTC

Figure 7.2.3.6 Status Window

This screen displays the status of certain important system parameters. It also offers control over the current DHCP lease for the IP Address.

7.2.3.7 System Log

To view the system logs, click on the System log link in the left navigation bar. A screen is displayed as shown in Figure 7.2.3.7.

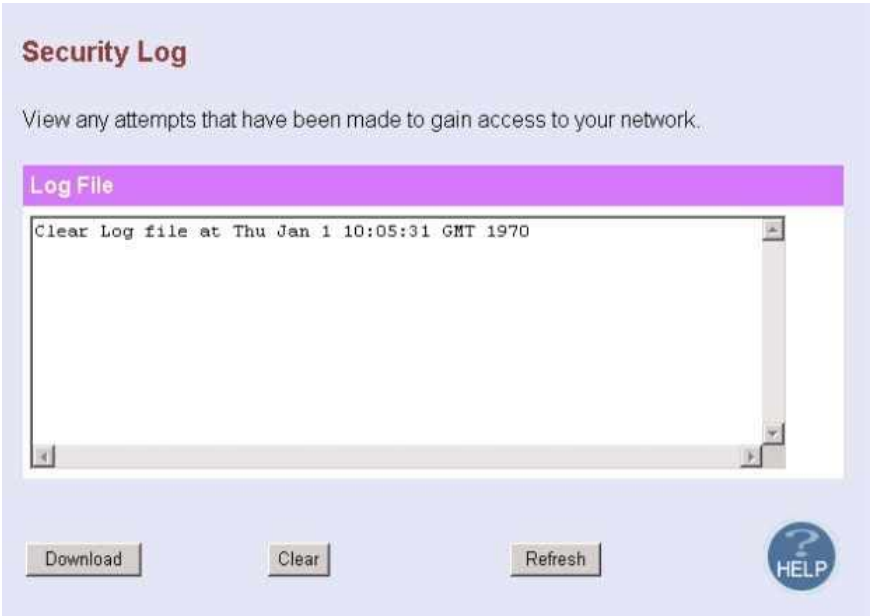


Figure 7.2.3.7 Security Logs

The screen contains the following details: Fields in Security Logs

Field	Description
Log File	This lists all the system events.

- Click Download to download the log file to the computer.
- Click Clear to clear this page.
- Click Refresh to retrieve system event and update the log file.

7.2.3.8 Reset

To restart the system, click on the Reset link in the left navigation bar. A screen is displayed as shown in Figure 7.2.3.8.

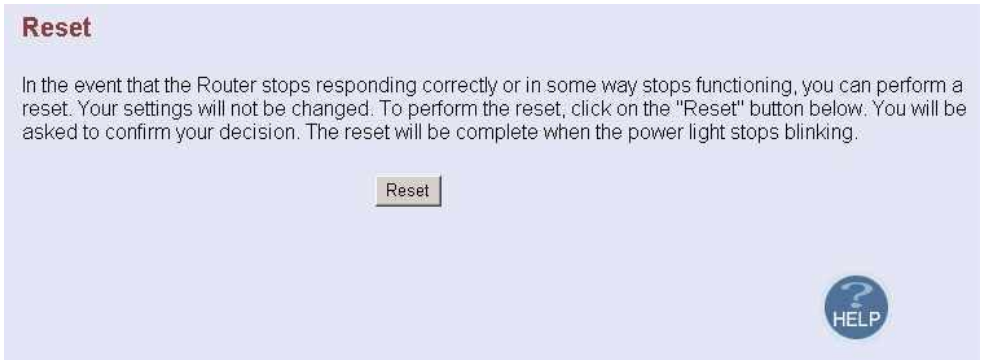

Reset
In the event that the Router stops responding correctly or in some way stops functioning, you can perform a reset. Your settings will not be changed. To perform the reset, click on the "Reset" button below. You will be asked to confirm your decision. The reset will be complete when the power light stops blinking.
Reset
HELP

Figure 7.2.3.8 Reset VDTU2-104&CPE Modem

- Click Reset to restart the system.

7.2.4 WAN

The WAN settings can be viewed in the left navigation bar. The following are the options available under WAN, as shown Figure 7.2.4:

- Dynamic IP & Static IP
- PPPoE
- DNS

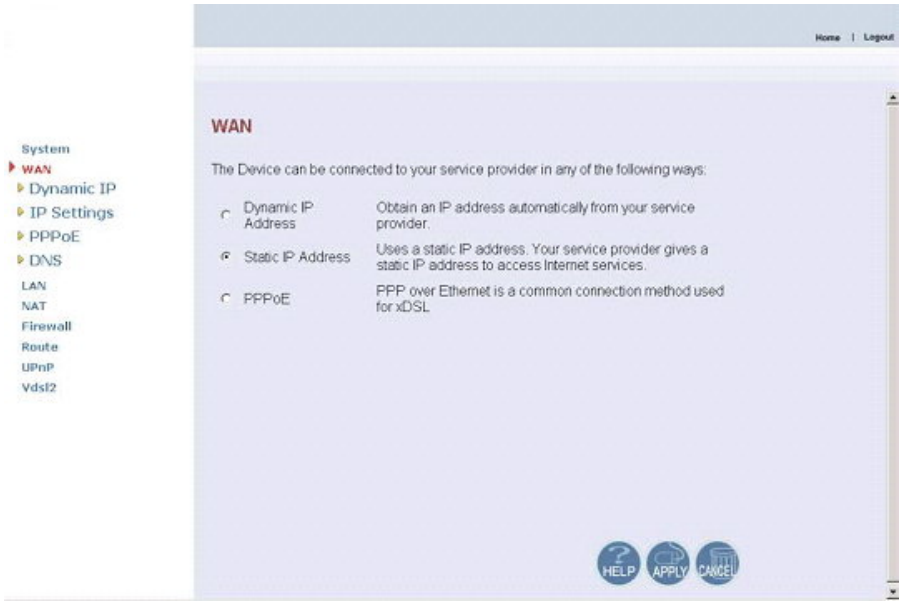


Figure 7.2.4 WAN Setting in Left Navigator Bar

7.2.4.1 Dynamic IP

To configure the WAN interface to dynamically obtain an IP Address, click on the Dynamic IP link in the left navigation bar. A screen is displayed as shown in Figure 7.2.4.1.

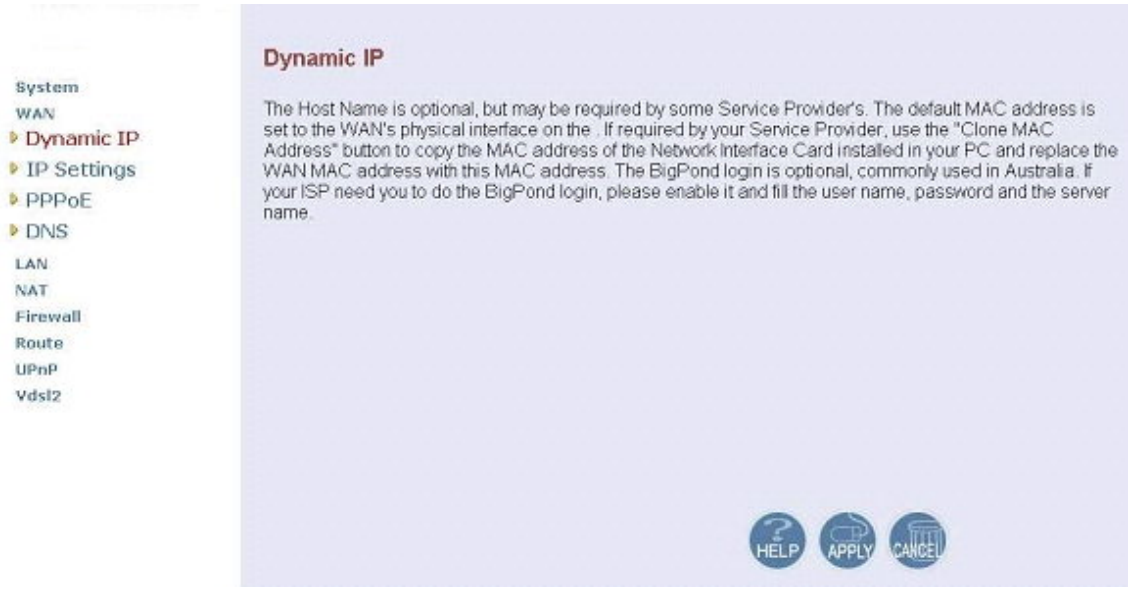

System
WAN
Dynamic IP
IP Settings
PPPoE
DNS
LAN
NAT
Firewall
Route
UPnP
Vdsl2
Dynamic IP
The Host Name is optional, but may be required by some Service Provider's. The default MAC address is set to the WAN's physical interface on the . If required by your Service Provider, use the "Clone MAC Address" button to copy the MAC address of the Network Interface Card installed in your PC and replace the WAN MAC address with this MAC address. The BigPond login is optional, commonly used in Australia. If your ISP need you to do the BigPond login, please enable it and fill the user name, password and the server name.
HELP
APPLY
CANCEL

Figure 7.2.4.1 Dynamic IP Configuration

The screen contains the following details:

- Click APPLY to save the information that has been entered.
- Click CANCEL to exit from this page.

7.2.4.2 Static IP

To configure the WAN interface to use a Static IP Address, click on the Static IP link in the left navigation bar. A screen is displayed as shown in Figure 7.2.4.2.

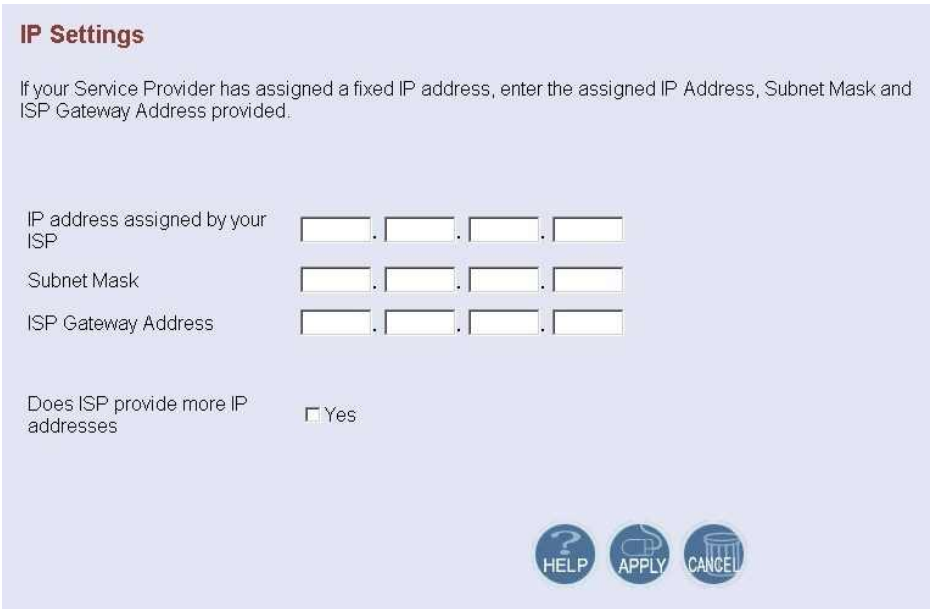

IP Settings
If your Service Provider has assigned a fixed IP address, enter the assigned IP Address, Subnet Mask and ISP Gateway Address provided.
IP address assigned by your ISP
Subnet Mask
ISP Gateway Address
Does ISP provide more IP addresses
Yes
HELP
APPLY
CANCEL

Figure 7.2.4.2 Static IP Configuration

The screen contains the following details:

Fields in Static IP

Field	Description
IP Address assigned by your ISP	Enter the IP Address of VDTU2-104 & 204 Modem.
Subnet Mask	Enter the Subnet Mask of VDTU2-104 & 204 Modem.

Fields in Static IP (cont'd)

Field	Description
ISP Gateway Address	Enter the Gateway address of the VDTU2-104 & 204 MODEM.
Does ISP provide more IP Address	Provides more IP Addresses of the WAN interface. Select the check box to enable this option. A screen is displayed as shown in Figure 41. Click Add to add IP Address and Subnet Mask.

7.2.4.3 PPPoE

To configure the WAN interface to use PPPoE, click on the PPPoE link in the left navigation bar. A screen is displayed as shown in Figure 7.2.4.3.

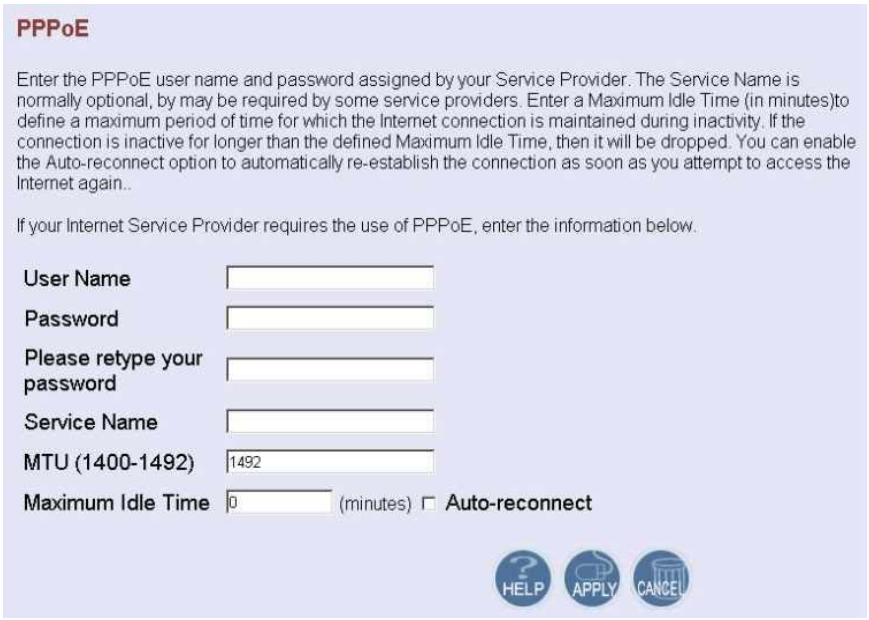

PPPoE
Enter the PPPoE user name and password assigned by your Service Provider. The Service Name is normally optional, by may be required by some service providers. Enter a Maximum Idle Time (in minutes)to define a maximum period of time for which the Internet connection is maintained during inactivity. If the connection is inactive for longer than the defined Maximum Idle Time, then it will be dropped. You can enable the Auto-reconnect option to automatically re-establish the connection as soon as you attempt to access the Internet again..
If your Internet Service Provider requires the use of PPPoE, enter the information below.
User Name
Password
Please retype your password
Service Name
MTU (1400-1492)
1492
Maximum Idle Time
0
(minutes)
Auto-reconnect
HELP
APPLY
CANCEL

Figure 7.2.4.3 PPPoE Configuration

The screen contains the following details:

Fields in PPPoE

Field	Description
User Name	Enter a name to use the PPPoE session.
Password	Enter the password of the login user.
Retype Password	Enter the password again to reconfirm.
Service Name	Enter a service name.

Fields in PPPoE (cont'd)

Field	Description
MTU	Enter the maximum connection units of the PPPoE. The MTU range is 1400 to 1492 bytes. By default, it is 1492.
Maximum Idle Time	This is the period of time required to keep the connection alive if no packets are transmitted. If no packets are transmitted between LAN port and WAN port or between VDTU2-104 & 204 MODEM and WAN, the connection is disconnected after the 'Maximum idle time. If the Auto-reconnect check box is selected, the PPP connection is re-established if there is some data that is received from the upper layers to be transmitted on this link.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.4.4 DNS

To configure the DNS address, click on the DNS link in the left navigation bar. A screen is displayed as shown in
Figure 7.2.4.4:

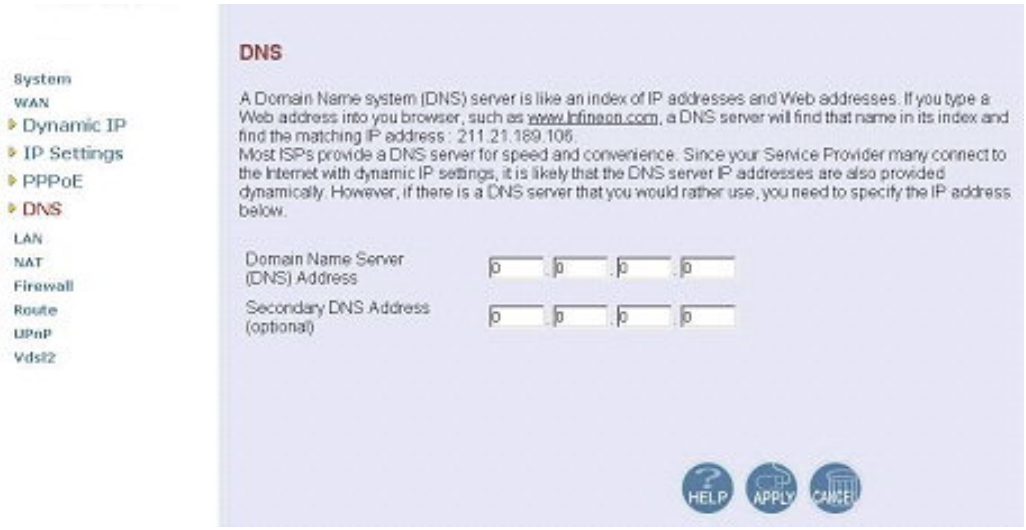

System
WAN
Dynamic IP
IP Settings
PPPoE
DNS
LAN
NAT
Firewall
Route
UPnP
Vdsl2
DNS
A Domain Name system (DNS) server is like an index of IP addresses and Web addresses. If you type a Web address into you browser, such as www.Infineon.com, a DNS server will find that name in its index and find the matching IP address : 211.21.189.106.
Most ISPs provide a DNS server for speed and convenience. Since your Service Provider many connect to the Internet with dynamic IP settings, it is likely that the DNS server IP addresses are also provided dynamically. However, if there is a DNS server that you would rather use, you need to specify the IP address below.
Domain Name Server (DNS) Address
Secondary DNS Address (optional)
HELP
APPLY
CANCEL

Figure 7.2.4.4 DNS Configuration

The screen contains the following details:

Fields in DNS

Field	Description
Domain Name Server(DNS) Address	Enter the DNS address of the primary DNS server.
Secondary DNS Address(optional)	Enter the address of the secondary DNS server, if available.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.5 LAN

The LAN Setting can be viewed in the left navigation bar. The following are the options available under LAN, as shown in Figure 7.2.5:

- LAN Settings
- DHCP Client List

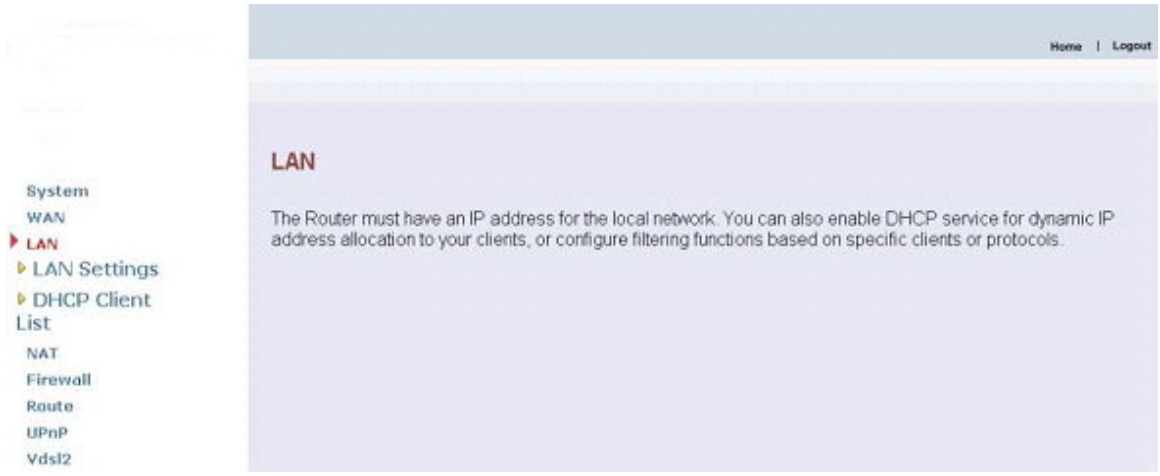

Home | Logout
System
WAN
LAN
LAN Settings
DHCP Client List
NAT
Firewall
Route
UPnP
Vdsl2
LAN
The Router must have an IP address for the local network. You can also enable DHCP service for dynamic IP address allocation to your clients, or configure filtering functions based on specific clients or protocols.

Figure 7.2.5 LAN in Left Navigator Bar

7.2.5.1 LAN Settings

Attention: For the VDTU2-104 & 204 MODEM it is recommended to select a simple IP setting suitable to controlled lab environments. Set a static IP address and don't use DHCP. The required steps are explained in Chapter 4.4 on Page 14!

To configure the LAN interface, click on the LAN Settings link in the left navigation bar. A screen is displayed as shown in Figure 7.2.5.1 in case of the VDTU2-104 & 204 Modem.

Figure 7.2.5.1 LAN Settings

The screen contains the following details: Fields in LAN Settings

Field	Description
IP Address	Enter the LAN interface IP Address of VDTU2-104 & 204 MODEM.
Subnet Mask	Enter the LAN Subnet Mask of VDTU2-104 & 204 MODEM.
The Gateway acts as DHCP Server	Enable or disables the DHCP Server of the VDTU2-104 & 204 MODEM. Select the check-box to enable this option.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.5.2 DHCP Client List

To view the DHCP client list, click on the DHCP Client List link in the left navigation bar. A screen is displayed to list all DHCP client connection with IP Address and MAC Address as shown in Figure 7.2.5.2.

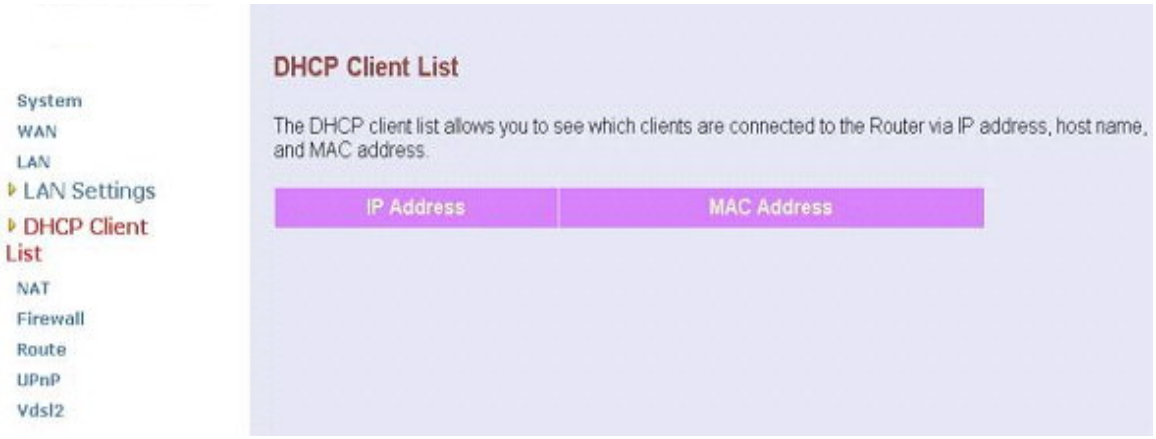


Figure 7.2.5.2 DHCP Client List

7.2.6 NAT

The NAT Settings can be viewed in the left navigation bar. The following are the options available under NAT, as shown in Figure 7.2.6:

- Virtual Server
- Port Mapping
- DMZ

Home | Logout
System
WAN
LAN
NAT
Virtual Server
Port Mapping
DMZ
Firewall
Route
UPnP
Vdsl2
NAT Settings
Network Address Translation (NAT) allows multiple users at your local site to access the Internet through a single public IP address or multiple public IP addresses. NAT can also prevent hacker attacks by mapping local addresses to public addresses for key services such as the Web or FTP.

Figure 7.2.6 NAT in Left Navigator Bar

7.2.6.1 Virtual Server

To configure virtual server, click on the Virtual Server link in the left navigation bar. A screen is displayed as shown in Figure 7.2.6.1:

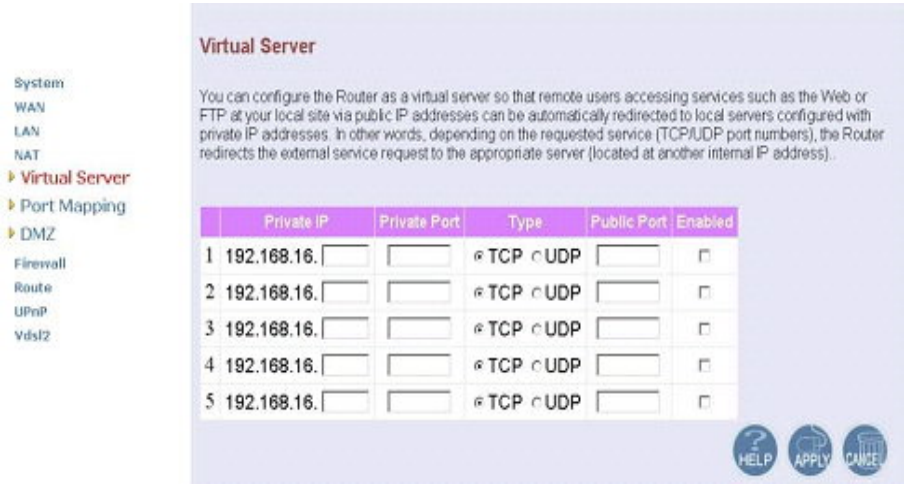

System
WAN
LAN
NAT
Virtual Server
Port Mapping
DMZ
Firewall
Route
UPnP
Vdsl2
Virtual Server
You can configure the Router as a virtual server so that remote users accessing services such as the Web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port numbers), the Router redirects the external service request to the appropriate server (located at another internal IP address).
Private IP
Private Port
Type
Public Port
Enabled
1 192.168.16.
2 192.168.16.
3 192.168.16.
4 192.168.16.
5 192.168.16.
TCP UDP
HELP
APPLY
CANCEL

Figure 7.2.6.1 Virtual Server Configuration

The screen contains the following details:
Fields in Virtual Server

Field	Description
Private IP	Enter a private IP Address of specified entry.
Private Port	Enter a private Port number of the specified entry.
Type	Select virtual server protocol type of the specified entry.
Public Port	Enter a public port number of the internet user to access the virtual server.
Enabled	Enable the specified entry of the virtual server.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.6.2 Port Mapping

To configure Port Mapping, click on the Port Mapping link in the left navigation bar. A screen is displayed as shown in Figure 7.2.6.2:

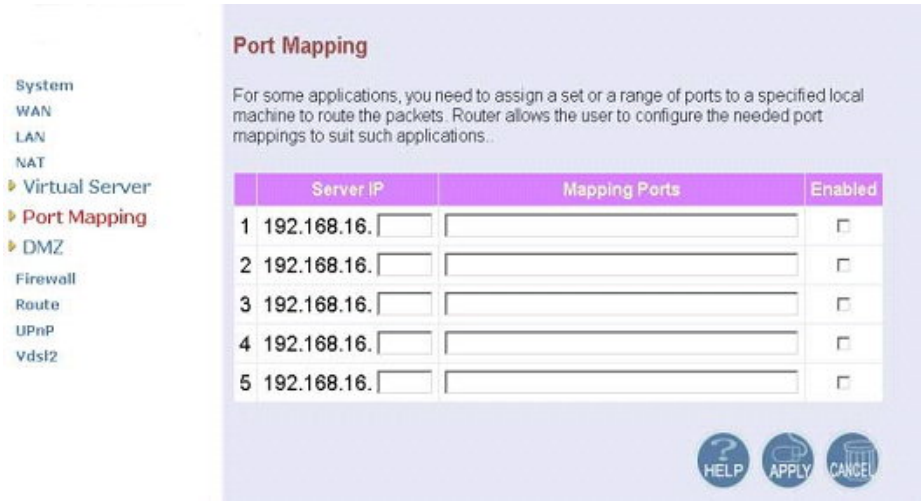


Figure 7.2.6.2 Port Mapping Configuration

The screen contains the following details:
Fields in Port Mapping

Field	Description
Server IP	Enter the IP Address of a specified local machine.
Mapping Port	Assign a range of port or specific port number to route the packets.
Enabled	Enable a specified entry of the Port Mapping.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.6.3 DMZ

To configure the DMZ, click on the DMZ link in the left navigation bar. A screen is displayed as shown in Figure 7.2.6.3:

System
WAN
LAN
NAT
Virtual Server
Port Mapping
DMZ
Firewall
Route
UPnP
Vdsl2
DMZ(Demilitarized Zone)
If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open the client up to unrestricted two-way Internet access by defining a virtual DMZ Host.
Enable
IP Address of Virtual DMZ Host
0 . 0 . 0 . 0

Figure 7.2.6.3 DMZ Configuration

The screen contains the following details:

Fields in DMZ

Field	Description
Enable	Enable or disable the DMZ setting of VDTU2-104 & 204 MODEM. Select the check box to enable this option.
IP Address	Enter IP Address of the DMZ host.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.7 Firewall

The Firewall Settings can be viewed in the left navigation bar. The following are the options available under Firewall, as shown in Figure 7.2.7:

- Firewall Options
- MAC Control
- Client Filter

Figure 7.2.7 Firewall in Left Navigator Bar

7.2.7.1 Firewall Options

To enable the firewall options, click on the Firewall Options link in the left navigation bar. A screen is displayed as shown in Figure 7.2.7.1:

System
WAN
LAN
NAT
Firewall
Firewall Options
Client Filtering
MAC Control
Route
UPnP
Vdsl2
Block WAN Scan
"Block WAN Scan" allows you to prevent the hackers from testing the services of the Router.
"Discard ping from WAN side" cause the Router to not respond to the hacker scan packets from the public WAN IP address.
Enable Hacker Attack Protect
Discard PING from WAN side
Discard to PING the Gateway
Drop Port Scan

Figure 7.2.7.1 Firewall Options Configuration

The screen contains the following details: Fields in Firewall Options

Field	Description
Enable Hacker Attack Protect	Select the check box to log and drop all the hacker attack events.
Discard PING from WAN	Select the check box to drop all PING from the WAN side.
Discard PING the Gateway	Select the check box to drop all PING to VDTU2-104 & 204 MODEM packet for the LAN side.
Drop Port Scan	Select the check box to drop all the port scan packets.

- Click APPLY to save the information that has been entered.

7.2.7.2 MAC Control

To configure MAC Control, click on the MAC Control link in the left navigation bar. A screen is displayed as shown in Figure 7.2.7.2:

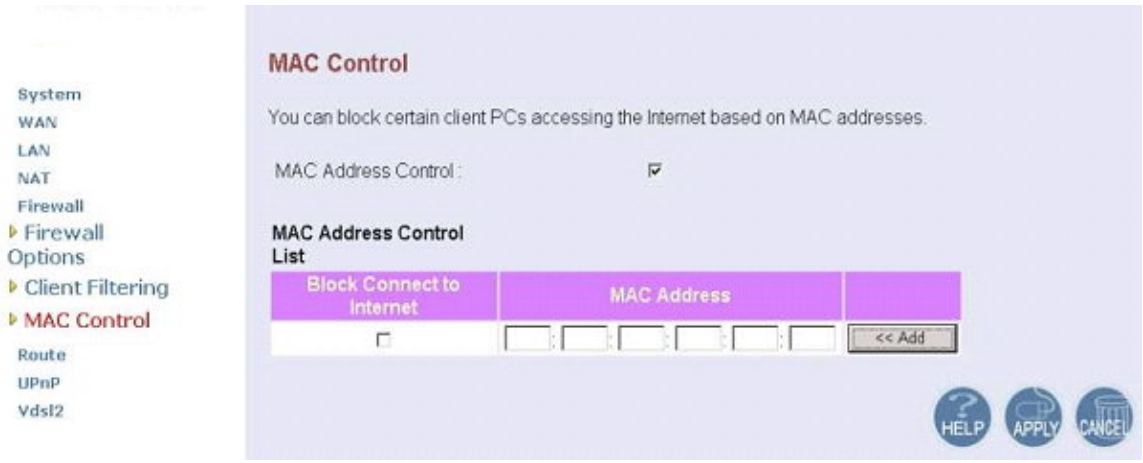


Figure 7.2.7.2 MAC Control Configuration

The screen contains the following details: Fields in MAC Control

Field	Description
MAC Address Control	Enable or disable the MAC address control.
Block Connection to Internet	Enable or disable block status. If the check box is selected, it blocks the specified MAC address.
MAC Address	Assign the blocking MAC address for local machine.

- Click Add to add the specified MAC address entry in the list.

7.2.7.3 Client Filter

To enable Client Filter, click on the Client Filter link in the left navigation bar. A screen is displayed as shown in
Figure 7.2.7.3.

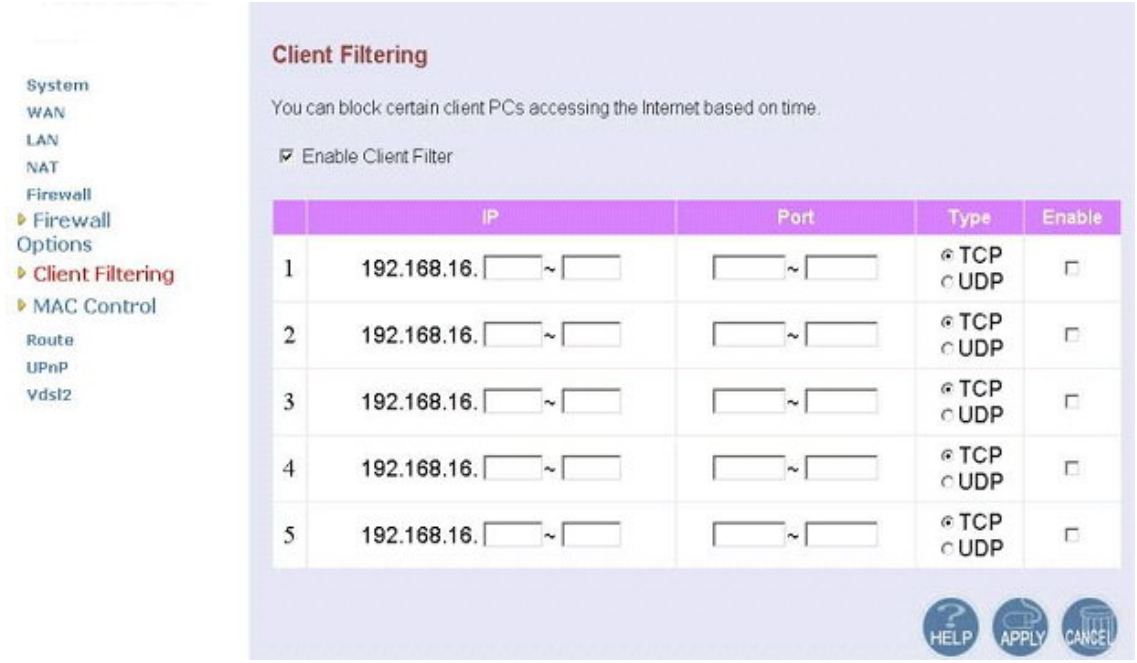


Figure 7.2.7.3 Client Filter Configuration

The screen contains the following details:
Fields in Client Filter

Field	Description
Enable Client Filter	Enable or disable the Client Filter feature of VDTU2-104 & 204 MODEM. Select the check box to enable this option.
IP	Enter the filter IP Address range of the local machines under VDTU2-104 & 204 MODEM.
Port	Enter the filter Port number range of the local machines under VDTU2-104 & 204 MODEM.
Type	Select TCP or UDP to filter the protocol type packets from the local machines.
Enable	Provides more IP Addresses of the WAN interface.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY to save the information that has been entered.

7.2.8 Route Settings

The Route Settings can be viewed in the left navigation bar. The following are the options available under Route, as shown in Figure 7.2.8:

- Static Routing
- Routing Table List

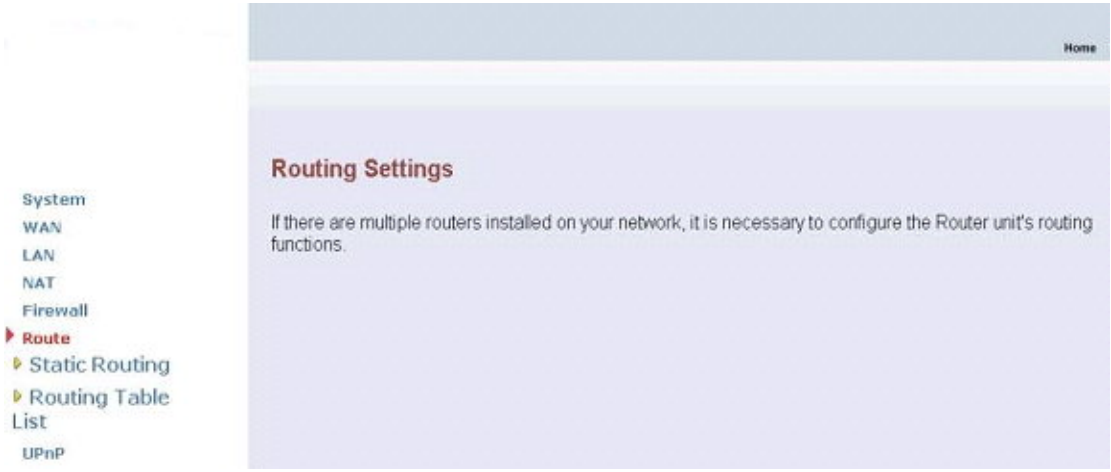


Figure 7.2.8 Route in Left Navigator Bar

7.2.8.1 Static Routing

To setup Static Routing, click on the Static Routing link in the left navigation bar. A screen is displayed as shown in
Figure 7.2.8.1.

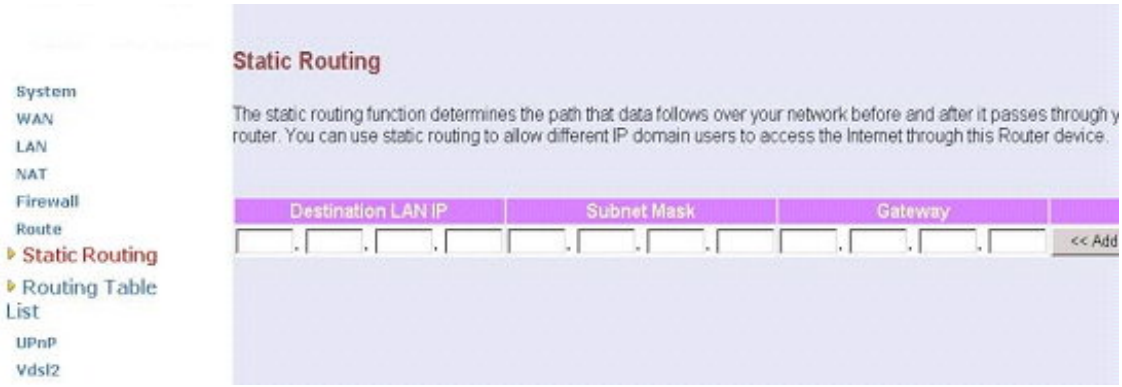


Figure 7.2.8.1 Static Routing Configuration

The screen contains the following details:

Fields in Static Routing

Field	Description
Destination LAN IP	Enter the IP Address of routing entry.
Subnet Mask	Enter the Subnet Mask of routing entry.
Gateway	Enter the Gateway address of routing entry.

- Click Add to add the information that has been entered.

7.2.8.2 Routing Table List

To view the Routing entry table list of VDTU2-104 & 204 MODEM, click on the Routing Table by link in the left navigation bar.
A screen is displayed as shown in Figure 7.2.8.2.

Figure 7.2.8.2 Routing Table List

The screen contains the following details:

- Click Refresh to update currently routing list of the VDTU2-104 & 204 MODEM.

7.2.9 UPnP Settings

The UPnP Settings can be viewed in the left navigation bar. The following are the options available under UPnP, as shown in Figure 7.2.8:

- Settings

Home | Logout
UPnP
UPnP is an architecture for pervasive peer-to-peer network connectivity of intelligent appliances, wireless devices, and PCs of all from factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to ad-hoc or unmanaged networks whether in the home, in a small business, public spaces, or attached to the Internet. The supports the UPnP InternetGatewayDevice for Home Networking.
System
WAN
LAN
NAT
Firewall
Route
UPnP
Settings
Vdsl2

Figure 7.2.9 UPnP in Left Navigator Bar

7.2.9.1 Settings

To enable or disable the UPnP Settings, click on the Settings link in the left navigation bar. A screen is displayed as shown in Figure 7.2.9.1.

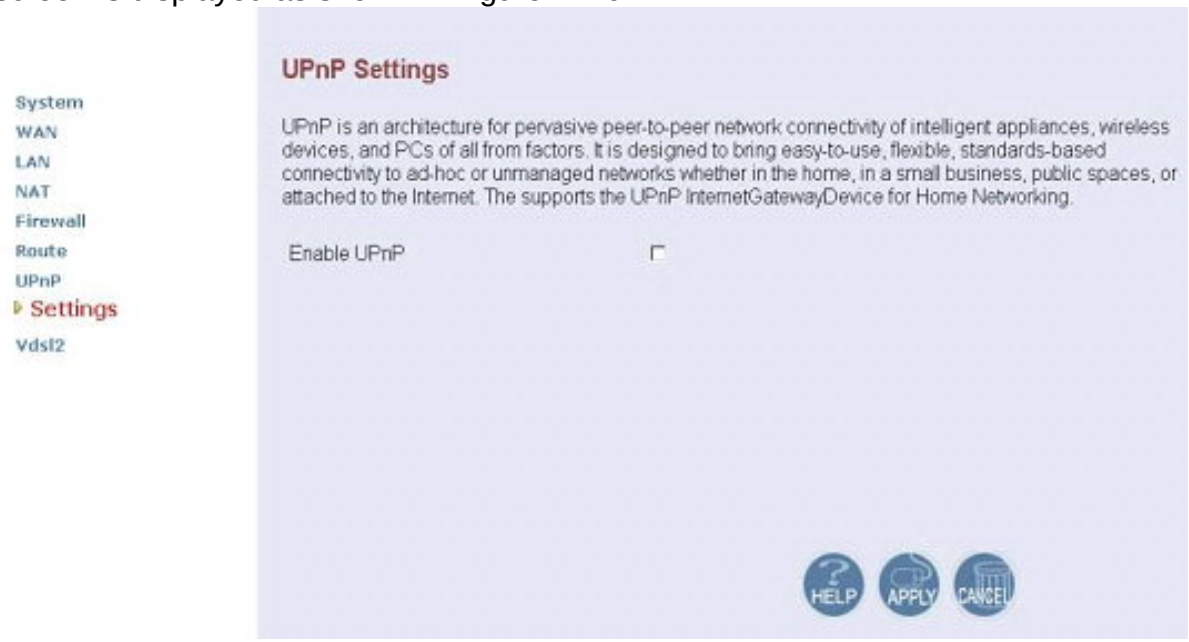

UPnP Settings
UPnP is an architecture for pervasive peer-to-peer network connectivity of intelligent appliances, wireless devices, and PCs of all from factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to ad-hoc or unmanaged networks whether in the home, in a small business, public spaces, or attached to the Internet. The supports the UPnP InternetGatewayDevice for Home Networking.
Enable UPnP
HELP
APPLY
CANCEL
System
WAN
LAN
NAT
Firewall
Route
UPnP
Settings
Vdsl2

Figure 7.2.9.1 UPnP Configuration

The screen contains the following details:

Table 22 Fields in UPnP Settings

Field	Description
Enable UpnP	To enable or disable UPnP Setting. Select the check box to Enable or Disable the UPnP function of VDTU2-104 & 204 MODEM.

- Click CANCEL to exit from this page without saving the changes.
- Click APPLY at any time during configuration to save the information that you have entered.

Appendix A: Product Features & Specification

Product Name：VDTU2-104 & 204 MODEM (VDSL2 Modem)

Features:

- Compliant with IEEE 802.3 & 802.3u Ethernet Standards
- Compliant with ETSI, ITU, ANSI VDSL standards
- Provides 4 x 10/100M auto-sensing RJ-45 Ethernet ports
- Supports Bandwidth setup with 100 Mbps VDSL RJ-11 ports
- POTS / ISDN Splitter port RJ-11 x 1 (Splitter on board)
- Supports auto speed for VDSL2 port
- Supports Web management(HTTP)
- Supports TFTP
- Supports PPPOE
- Supports uPnP
- Supports NAT/DHCP/DMZ
- Supports Firewall
- Supports Route & Switch mode
- Supports Loop back
- Supports SNR indicator
- Provides surge protection for VDSL2 port

Specifications:

- Compliant with IEEE 802.3 & 802.3u Ethernet Standards
- Compliant with ETSI, ITU, ANSI VDSL2 standards
- 10/100M auto-sensing/auto-MDIX RJ-45 Ethernet ports x 4
- VDSL2 RJ-11 port x 1 (VDTU2-104 MODEM / VDTU2-204 MODEM)
- POTS / ISDN Splitter port RJ-11 x 1
- Switch method : store and forward
- Flow control Full duplex : IEEE 802.3x
  Half duplex : Back pressure
- Driver capable : 100 M: 0.3 Km
- Indication LED x 6: Power LED x1
  Ethernet Link/Active LED x 4
  VDSL Link LED x 1
- Console port : RS-232C/115200bps
- Dimension: L x W x H = 184mm x 146mm x 40mm(7.2" x 5.74" x 1.57")
- Operating temperature: 0°C to 50°C (32 to 122F)
- Operating humidity: 10% to 90% (non-condensing)
- Storage temperature: -20 to 65°C (-4F to 149F)
- AC to DC adapter
  Input range: 100VAC~240VAC/50~60Hz
  Output: 12VDC/1A
- Power consumption : 7.5w
- EMI Compliant: CE, FCC, VCCI
- Chipset: Infineon

Appendix B：Compliance and Safety Information

FCC Radio Frequency Interference Statement

This equipment has been tested to comply with the limits for a computing device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by taking one or more of the following measures：

1.Reorient or relocate the receiving antenna.

2.Increase the distance between the equipment and receiver.

3.The equipment and the receiver should be connected to outlets on separate circuits.

4.Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn’t practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Important Safety Instructions

Caution：The direct plug-in wall transformer serves as the main product for disconnecting. The socket outlet shall be installed near the product and be readily accessible.
Caution：Use only the power supply included with this product. In the event the power supply is lost or damaged：In the United States, use only with CSA certified or UL listed Class 2 power supply, rated 12Vdc 1A or above.
IN Europe, use only with CE certified power supply, rated 12Vdc 1A or above.
Do not use this equipment near water, for example in a wet basement.

Avoid using a telephone during an electrical storm. There may be a remote risk of electrical shock from lightning.

Do not use the telephone to report a gas leak in the vicinity of the leaking area.

If you experience trouble with this unit, please contact customer service at the address and phone listed below. DO NOT DISASSEMBLE THIS EQUIPMENT. It does not contain any user serviceable components.

FCC Warning

This equipment has been tested to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.

CE Mark Warning

This is a CE class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Warranty

The original owner of this package will be free from defects in material and workmanship for one-year parts after purchase. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose, or any warranty arising out of any proposal, specification, or sample. Shall not be liable for incidental or consequential damages. We neither assumes nor authorizes any person to assume for it any other liability.

Note: Please do not tear off or remove the warranty sticker as shown, otherwise the warranty will be void.